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ABSTRACT

This booklet, second in a series on issues in assessment, seeks to describe an initiative supported by Finger Lakes Community College (New York) to use classroom assessment techniques (CATs) in different academic areas and to present an overview of some assessment approaches that have been used in the classroom. Papers include: (1) "Enhancing Effective Teaching in Multiple Disciplines: An Overview of a College-Wide Classroom Research Project" (Leonard T. Malinowski); (2) "Reinvigorating Our Classrooms: Positive Results of Using Classroom Assessment Techniques" (Bob Morris); (3) "CATS Project: Seeing Problems, Finding Solutions" (Barbara Murphy); (4) "The Prospectus" (Martin C. Dodge); (5) "How CATs Changed My Teaching Style" (Kathleen DelCour); and (6) "CATs in Cooperative Physics" (Sam Samanta). (Contains four references and five selected readings.) (SLD)

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ED 375 167

Issues In Assessment:

Classroom Implementation

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Forward

In the Spring of 1993, Issues in Assessment: Putting Theory into Practice was published with several purposes in mind. The first was to document the assessment efforts as they impacted upon teaching and learning at Finger Lakes Community College (FLCC). The second reason was to present, in this first issue, the philosophical basis for the assessment effort and identify the historical background and future directions on our campus. In addition, Issues in Assessment: Putting Theory into Practice served as a means of communication for the dissemination of information on the assessment efforts to our colleagues at FLCC and at other institutions.

This year, Issues in Assessment: Classroom Implementation, takes the next step and seeks to describe an initiative supported by the College to use classroom assessment activities in different academic areas and to present an overview of some of the assessment efforts that have occurred in the classroom. This issue is somewhat different in content and tone. The authors discuss their approach to classroom assessment techniques (CATs) and their reactions. A common thread in all of the articles is the authors' hesitancy about jumping onto another "educational bandwagon." Initially, all are a little suspicious of the CAT, but all have come away from the project feeling that they have learned more about themselves, their teaching and their students.

The article by Len Malinowski offers an overview of the project which was conducted during the 1992-93 academic year. The contributors, Bob Morris, Barbara Murphy, Kathy DelCour, Marty Dodge, and Sam Samanta, share their experiences with CATs. The authors offer their ideas and advice for implementing CATs; they also very honestly reflect upon how involvement with CATs has impacted upon their approach to teaching and learning. This issue also offers a list of suggested readings and additional resources may be found in the Cross and Angelo books.

The authors represent a cross-section of the academic areas at the College and a recurrent theme in each article is the need for us, as an educational community, to maintain open discussion and to share teaching practices and strategies. This theme should offer us all a focus for renewal of our profession and encourage us to reserve the time to discuss with our colleagues, on a regular basis, what we are genuinely all about - teaching and learning.

Patricia A. Malinowski, Editor
Associate Professor, Developmental Studies

Dear Colleague,

Over the past decade, issues involving assessment have dominated higher education. The emphasis on assessment has generally taken two forms:

1) a concern about outcomes of those who benefit from their educational experience at the collegiate level; and

2) initiatives designed to improve classroom instruction and indeed the entire educational experience brought to students.

Finger Lakes Community College continues to explore ways that both forms of assessment can be incorporated into our institutional practices. On the one hand, we continue to be concerned about appropriate measures to identify what it is precisely that students learn while they are here and attempt to document their learning experiences. Outcomes assessment has become a focus for accrediting efforts throughout the country. It has become a focus of state agencies, and indeed the public has indicated a strong interest in measures which help document what it is that a student has learned at the collegiate level. Naturally, over the next two to three years, FLCC will be exploring appropriate measures that can be widely used throughout our academic programs in order to document a student's educational experience.

Equally important, however, is the concern about how classroom instruction can be improved. Classroom assessment techniques, pioneered by such researchers and scholars as K. Patricia Cross, have generally been among the most successful methods used by classroom teachers in order to improve the quality of their instruction. Continuous improvement in the classroom not only demands commitment from instructors who bring educational experiences to students; it also requires the use of classroom feedback and assessment techniques which help teachers identify methods most likely to produce better student learning.

The series of essays contained within this monograph typify many of the efforts of the Faculty and Administration at Finger Lakes Community College to incorporate assessment throughout our curriculum. As an institution, we are committed to continuous improvement in all realms; one of these realms includes the educational experiences that we bring to students. I commend the efforts of our Faculty and Administration in their commitment to institutional assessment and particularly to the efforts of the Assessment Committee at FLCC. Hopefully, the product of these efforts ultimately will be a continually improving educational product that is provided to the diverse student population of FLCC.

Daniel T. Hayes, Ph.D.
President, Finger Lakes Community College

Enhancing Effective Teaching in Multiple Disciplines: An Overview of a College-Wide Classroom Research Project

Leonard T. Malinowski

In the Spring of 1992, I met with the Dean of Educational Services, Dr. James Ortiz, and the Director of Instruction and Curriculum, Dr. Marylou Boynton, to outline a project intended to improve the classroom instruction at Finger Lakes Community College (FLCC). The "classroom research project," involved teaching faculty in a formal study of issues of teaching and learning and was based on the book by Cross and Angelo(1988), *Classroom Assessment Techniques: A Handbook for Faculty*. Cross and Angelo use the phrase classroom research to describe their work on incorporating classroom assessment techniques into college teaching and learning.

The major emphasis of the project was to encourage faculty to use classroom assessment techniques. A classroom assessment technique was defined for this project as "any method which could be used by an instructor to obtain feedback from students concerning the effectiveness of recent instruction." It included the evaluation of this feedback and immediate implementation of a plan to enhance the effectiveness of the instruction.

The activities of the project were to assist the participants in:

1. Implementing classroom assessment techniques (CATs) in one section of one course in the Fall semester of 1992. The participants would become experienced in using classroom assessment techniques and in the future they would serve as mentors for other faculty members not involved in the project.
2. Writing a case study of their experiences based on:
    a. A pre-selected theme
    b. Using case study techniques
3. Developing a model and examing the evidence of change in instruction resulting from research in classroom assessment techniques. This change could be observed by the participants in:
    a. their teaching
    b. types of student learning activities
    c. student outcomes
    d. student retention

Other research considerations were to connect this project with the results of other assessment activities at FLCC and at other colleges nationally.

The Original Plan for the Classroom Research Project

In brief, the plan incorporated involved four phases. The first phase called for the faculty members in the study to become acquainted with what classroom assessment techniques are through a series of readings and meetings. The second phase required the faculty members to use classroom assessment techniques during the Fall semester of 1992 and keep a log of their actions and comments. The third phase requested that the faculty members disseminate the results of their use of classroom assessment techniques at professional meetings held at the college during the Spring semester of 1993 and act as resource people for other members of the faculty not involved with the project. The final phase involved the publishing of outcomes of the project as perceived by the faculty member participants and myself as the coordinator of the project. Each faculty member would opt to continue the project at the beginning of each of the phases. The Administration of the College demonstrated its support of this project by compensating the participants and providing for the project staff.

Phase 1

The focus of the project was the improvement of classroom instruction rather than the evaluation of the instructor for purposes of promotion, merit or continuing appointment. The project design called for eight faculty members to participate. One faculty member was chosen from each department of the college other than the Nursing Department. The feeling was that the Nursing Department was well-schooled in effectively using classroom assessment techniques. College faculty members who were members of the project are subsequently referred to as the participants of the project. Marylou Boynton and I functioned as the project staff.

Goals of the Classroom Research Project

1) To develop and support a group of faculty experienced in the use of classroom assessment techniques (CATs) such as found in the text by Cross and Angelo.

2) To develop a core of cases that permit a critique of the impact CATs have in different classes, using different teaching styles, from different disciplines, and with different student populations. This core of cases serves as a basis for a college-wide discussion of CATs.

3) To obtain observations and measures from the cases that permit inferences or generalizations about the impact of CATs on the educational experience at FLCC. These should permit a connection between CATs and institutional effectiveness.

During April of 1992, eight faculty members were identified as possible participants for the project. They were informed that the project would be a qualitative study rather than quantitative. They were told that the research questions to be explored were:

1) Does the regular use of CATs prompt teaching adjustments that lead to improved student learning?

2) Does the regular use of CATs cause students to be more responsible for their learning?

3) Does the regular use of CATs permit instructors to respond better to their students learning needs in the classroom?

4) Does the regular use of CATs cause greater student retention in classes?

On May 27, 1992, a workshop was held for the possible participants. They viewed a tentative list of participants' responsibilities. The list of responsibilities was revised by the participants thus encouraging involvement in the team from the initial stages. The final list of participant responsibilities for the project follows:

• Participants in this project will teach one section of their course load using classroom assessment techniques that they choose.

• At least eight times classroom assessment techniques will be used by each participant during the Fall 1992 semester. A specific technique can be used more than once during the semester. This is encouraged where a technique needs time to be developed by the students and instructor.

• Each participant will keep a log of his/her perceptions concerning every time a CAT is used.

• Participants will have access to project staff to help design, implement, and evaluate the CATs used.

• Participants will have access to project staff to discuss possible improvements after identification of an instructional concern.

• Participants will be encouraged to visit the classrooms of other participants to view the class and CAT process. Visitations by project staff were also possibilities.

• There will be five meetings of the project members during the Fall 1992 semester to exchange insights, concerns, and reactions. The purposes of these meetings are two-fold. One purpose is to serve as interim status report times for the participants. The second purpose is to allow participants to learn from the experiences of their peers. In some cases, participants may alter the plan of a CAT based upon the comments of their peers. One of these meetings will be prior to the first day of classes for the Fall semester.

If a faculty member agreed to be a participant in the first phase of the project, then their responsibilities included: reading *Classroom Assessment Techniques: A Handbook For Faculty* by Cross and Angelo (1988) by the end of June 1992, researching the specific CATs that would be implemented in the Fall 1992 and implementing those CATs during that semester.

During July and August, the participants chose the CATs that would be used in the Fall semester. Participants were given a list of questions to assist them in determining which course section and what CATs to use. This list was noted as not being all inclusive.

Which specific section of a course will be administered the CATs?

What specific CATs will be used during the course and why?

What is the tentative sequence of the CATs?

What type of actions may be logical reactions to the results of the CATs?

What is the specific goal of using each CAT?

What is the goal for using this collection of CATs?

Although all participants could quickly name two or three CATs that they would use during the semester, it was difficult for most of them to devise a semester long plan. Three participants devised detailed semester long plans. The remaining participants named specific CATs they would use, but were unable to dictate the

sequence in which they would be attempted. The project staff served as facilitators for individuals who wished assistance in their planning or implementation of the project.

Participants had access to written materials on CATs based on the current holdings of the college library. The book, *Improving College Teaching* by Weimer (1990), was purchased for each participant and became required reading. Other materials were acquired by the college library based on the individual requests.

The progress of the participants was monitored. Seven of the eight participants had a well-defined plan to use the required number of CATs during the Fall semester by September 6, 1992. The participant who was having difficulty received additional assistance from the project staff and eventually did complete this phase of the project.

Phase 2

Collectively, the participants did attempt over 64 CATs during the Fall semester of 1992. However, not all participants accomplished at least eight CATs with one section of a course. The maximum number of CATs attempted in a course by a participant was 11 and the minimum was five.

The meetings during the Fall semester of 1992 were more productive than initially expected. The purpose of these meetings was for participants to learn from the experiences of one another. This did indeed happen.

However, other unexpected exchanges occurred at these meetings. For example, a participant reported about administering a CAT and suggested how to improve the CAT if used another time. As other participants questioned the reporter about either details or impressions gleaned from the CAT, discussions ensued about cross disciplinary academic issues. These scholarly discussions of cross disciplinary aspects of how to improve college teaching had never had a forum to spontaneously be addressed at the College.

An example of this took place when one of the instructors, who was not a member of the English area of the Humanities Department spoke about using a written autobiography of students as a background knowledge probe. The instructor determined that this CAT could be used as a diagnostic tool to determine the ability of the student to communicate in writing. If the instructor believed that the student had difficulty in composing written communications, then the student was strongly recommended to seek help from the College's Academic Support Center when faced with writing assignments.

The instructor questioned whether this method of grading the student's ability to communicate in writing was consistent with that of members of the faculty who taught English. This lead to a discussion of the standards used by participants to

evaluate written assignments for correct usage of the English language. Surprisingly, most participants voiced the same standards regardless of the discipline.

One major observation was that two-year college students' participation in CATs was extremely low if the activities were ungraded. This lack of data to analyze left the instructors unable to properly identify and respond to the needs of the class. Every instructor began to associate a grade to CATs to assure the maximum number of responses from the class.

Participants kept a log, but its form was not specified. It was determined that the logs needed to contain some common response variables to facilitate the assessment of the classroom research project outcomes. Two participants adopted a diary format. The other participants adopted a form proposed by the project staff, but, in most cases, added other variables to it. An example of an enhanced version of the form by Robert Morris which received praise from the other participants is illustrated below.

Date:

Number in attendance:

Teaching goals:

Agenda:

CAT used:

Reasons for using CAT:

Anticipated results:

Results:

Teaching response to CAT:

Comments:

Teacher satisfaction rating for this CAT: (Likert scale with 1 = low and 10 = high.)

At the end of this phase, the project participants felt as if they had piloted or gained an exposure to CATs activities in their course. Most participants declared that in hindsight they would have modified some aspect of all of the CATs implemented. All participants stated that the initial number of eight CATs in one semester was too ambitious. Participants also felt the monthly meetings by the project members were of great value and allowed for discussion in an extremely

collegial atmosphere on college-wide issues that were related to CATs. They expressed a desire for these meetings to continue during the next semester even though this was not part of the classroom research project design.

These comments were taken under serious consideration by the project staff and a revision was made to the third phase of the project. The phase was expanded to allow participants to repeat the second phase of the project with only five CATs. Participants were encouraged to incorporate modification of the CATs based on the experience gained in the project's second phase.

Phase 3

One participant opted to leave the project because of commitments for the Spring semester. As the participants had gained valuable experience and confidence in working with CATs during the fall semester, the remaining participants for the third phase required very little support from the project staff in devising a plan to incorporate CATs into their teaching.

The dissemination of the results of the Fall semester CATs activity began with a session held for the entire faculty and staff in January of 1993 prior to the start of the Spring semester. The two-hour session included a review of the definition of CATs and a report by members of the project as to the effectiveness of the CATs used during the project. Participants of the classroom research project described modifications that they made to improve the effectiveness of the CATs that they used more than once during a semester. The last part of the session was reserved for questions and answers. The question and answer portion of the session provided a lively exchange of ideas. Many of the attendees were interested in attempting CATs or had tried a CATs activity without success. Many questions were requests concerning how to start to use CATs in one's teaching or how to modify a specific CATs activity that fails to generate data for analysis. Obviously, faculty members had been tinkering with CATs activities prior to the research project, but in many cases with lack of success.

As a result, participants were often requested to give a presentation as part of an academic department meeting. One on one conversations took place between participants and individual faculty members. The faculty interest level in the project and in the experiences of the participants has been high. The Administration is delighted with the results to the extent that knowledge of CATs activities may soon be incorporated into the adjunct faculty training sessions.

Phase 4

The fourth phase of the project is fulfilled by the publication of this second issue of the monograph *Issues in Assessment: Putting Theory Into Practice*. The articles in this issue written by the participants in the classroom research project address a specific theme or report how the incorporation of CATs has changed the teaching styles or strategies of a participant.

Recommendations for Future Classroom Research

Participants indicated that students were recalcitrant about participating in CATs unless the activity were graded. Contrary to most of the literature, the first recommendation is that these activities have a minimum grade associated to them to insure student participation.

Many participants stated that their first attempt at a CATs activity was not successful. Any activity written in the research will need modification to fit each individual teaching and learning situation because no two teaching situations are the same. Be prepared to try a CATs and modify it more than one time.

The third recommendation is that a faculty member interested in incorporating CATs should strongly consider attempting in the range of three to five activities per semester. Activities that work well in one discipline did not fare as well when attempted in another. Other experts in classroom research have suggested that novices in this area only attempt one CAT in the first semester, but certain CATs require more than one attempt to allow the students to acclimate to the activity.

The creation of a support structure or network of individuals involved in CATs was definitely an asset. There were two support groups for our project. The project staff worked with any individual one on one. The participant meetings during the project was the other support structure. Both support structures facilitated the modification of CATs into activities that improved the classroom teaching and learning situation.

Conclusions

There are many forms of evidence to attest to the success of the classroom research project . One form of evidence is manifested by the participants request and willingness to modify the project for the Spring Semester of 1993 because they were not satisfied with the results from their first experience with CATs. This indicated the predisposition of the participants to improve instruction and the acknowledgment by the participants of the merit of CATs as a device to accomplish that improvement.

Further evidence of the success of the project was the animated interactive discussions by participants in monthly meetings. Participants described the successes and failures with individual CATs. They were honest in stating their opinions of which CATs worked, which needed revisions, and which did not work. In the case of CATs which they believed would work with revision, they offered recommendations to their colleagues who had planned to use the same CATs later in the semester.

The most significant evidence was in the form of teachers using the CATs data to improve their instruction. Robert Morris, a member or the Humanities Department faculty stated it as follows.

> I found the main benefit of using CATs to be the increased participation and interaction that they encouraged....The CATs provide an excellent vehicle for assessment prior to a graded assessment such as quizzes and tests, thus allowing both students and instructors to address weaknesses before the fact rather than after.

Although CATs are designed for the purpose of formative evaluation, they could also be used in a summative manner. Revisions of CATs to obtain the desired data did not always occur in one semester. In other cases, if the CAT occurred at the end of the semester, there was not time to rectify instruction during that semester. Barbara Murphy, a member of the Developmental Studies Department, described this situation in detail using the CATs labeled as "Process Self-Analysis."

> Last semester I asked the students to hand in this CAT to describe their process for preparing their speeches, and I only received one of them! Also, a number of their speeches were not clear. This time I created a worksheet as a model for putting together a speech. Their use of this model in their actual speech was optional. Response to this was very favorable. Many used it as a guideline in their speeches, and the speeches were more organized this semester. I think the guideline may have contributed. So, doing a CAT really helped me to improve my instruction here.

All the participants made comments similar to those previously stated. The improvement of instruction had taken place based upon feedback from the students. Adjustments were made to instruction without jeopardizing the academic standards for the course.

In essence, CATs monitor the effectiveness of the communication between the instructor and the students. Once the effectiveness of the communication has been determined, the conscientious instructor, when necessary, can alter the instruction to address weaknesses in the prior communication. Instead of teaching and learning being viewed as disjoint processes, they are viewed as overlapping processes by the teacher and the students. The recognition of this perspective leads to greater cooperation between the instructor and the students to achieve the goals of the course. Without a doubt, this creates a better learning environment for the student.

Leonard T. Malinowski is a Professor of Mathematics and began teaching at Finger Lakes Community College in 1981.

Reinvigorating Our Classrooms: Positive Results of Using Classroom Assessment Techniques

Bob Morris

Growing To Like CATs

I had a bad concept of the CAT before I went to Thomas Angelo's workshop during our professional days in January of 1992--hair-spreading, furniture-clawing, and generally difficult. My wife and I are DOG people, and we just barely tolerate cats. To say that I went into the workshop with no background knowledge would be an understatement; I went in confused and slightly close-minded. I left that workshop more enlightened, a tad embarrassed by my ignorance, and motivated to do research. What I had begun to learn was intriguing, but I was not a convert. When I was approached in the Summer of 1992 about being a participant in a project to study the use of the Classroom Assessment Techniques (CATs) across eight disciplines at FLCC, I did not immediately agree. I had only tried a couple of the CATs that Dr. Angelo had presented, and I had not been overly successful. The CAT Project ambitiously required participants to use CATs eight times in one semester; however, I reluctantly agreed and accepted a copy of Cross and Angelo's first book on CATs.

Like any good book, as I read I had to pause often to think. Many of the techniques seemed inapplicable to my classroom. I had to adapt and discard techniques freely to come up with the required eight classroom applications of CATs for the project. Again, some of the CATs flopped when I tried to convert Cross and Angelo's "theory" into my practice, but like most change, I survived the painful moments and grew. I soon realized that I was changing the CATs less than they were changing me and my classroom. I was going to the library and the Teaching Center to get more books and articles. I was getting together with the eight colleagues in the project and really discussing practical ways to improve teaching and learning. Most importantly, as the year progressed, the dynamics of my classroom were changing: my classroom was being reinvigorated by their new ideas and my new energy and enthusiasm. In fact, there were many positive results of using CATs in my classroom that I want to share, results that I unabashedly hope will convince many of you who are apprehensive, as I was, to try CATs.

Getting To Know CATs: Indirect Benefits

When I finished graduate school, I felt as if a great burden had been lifted from me, and although I certainly did not think I knew all there was to know, I thought I knew enough to be effective. When I had need for specific information or when I ran into trouble, I would slink to the library to do the "required" research. I even went to the various workshops hoping to get new ideas, but I did not exactly seek out new ideas and techniques on a regular basis and certainly did not go sniffing around the stacks looking for hefty tomes containing the latest research in my field. I guess I felt that I had done my time in grad school, and I would just worry about implementing what I had learned there. It did not take long to get stale. After two years, my pool of ideas was dry, and there were plenty of areas in my teaching needing improvement. The idea of classroom research intrigued me; the concept had quick benefits written all over it. Classroom research was the catalyst for me to seek out new ideas and to test them with a certain safety--the safety of knowing that I was only trying other people's ideas, releasing me from the guilt of any possible failure. I was testing their theory, and if it did not work, I had no personal emotional tie to the idea. If it worked, then my students would learn more, which is the best reward for trying new ideas. With my increasing need for new ideas and this element of safety, I was finally over my burnout on research, and I plunged ahead. I read Cross and Angelo's first book on CATs and Weimer's excellent book *Improving College Teaching* as part of the project, but new knowledge begot new desire, so I scanned their excellent bibliographies for articles and read a dozen or so. I even scanned our library's collection of books on teaching writing and read or reread a few of the classics in my field. This reading became contagious, as it was when I was a student. The new ideas reinvigorated me and led me past others' techniques to creating new ones of my own.

Of course, new ideas increase in value through use and sharing. Every month the eight faculty members in the CAT project gathered for a roundtable discussion of what we had tried and what we had learned. I found these discussions to be just as provocative and motivational as the library and classroom research were. Not only did I hear new ideas, I met my colleagues on a new level and got the support of hearing others wrestling with the same issues that I find in my own classroom. We often teach in a vacuum, which is unfortunate and unhealthy. These sharing sessions even prompted me to visit the classrooms of two other instructors, visits that were exciting. This desire to connect with other teachers culminated in my team teaching an interdepartmental pair of courses (English 101 and Psychology 100) in the Fall 1993 term.

These benefits of doing classroom research with CATs--first, being motivated to find and to try new ideas, and second, sharing more openly with colleagues--may seem indirect and achievable with other means. They are. It seems, however, that it would be difficult if not impossible to assess our own classrooms without some knowledge of what is happening at other institutions and, perhaps more importantly, what is happening down the hall. It is too easy to tell ourselves that everything in our classrooms is going along fine. If we don't know what is possible, it would seem impossible to attain a much higher level of achievement. We give our students models all the time, but how often do we seek various models of successful teaching for ourselves to emulate? In essence, Cross and Angelo invite us to examine our classrooms and offer us fifty old and new techniques to assess the success of what is happening in those classrooms.

Basically, Classroom Assessment Techniques are methods of judging quickly how effectively we are teaching and how effectively our students are learning. Sometimes the techniques pat me and my students on our backs for jobs well done, and sometimes the results slap me in the face and motivate me to try new teaching techniques. I truly believe that the vast majority of our students want to learn and work hard to do so. If the assessment reveals a lack of learning, it usually reveals the need to teach in a different way. Shifting the blame for their lack of learning back partially to me has not been pleasant, but when I have changed teaching techniques in response to the classroom assessment, I have witnessed the increase in learning in papers, class discussions, tests, and evaluations. Increased learning is worth discomfort on my part.

Using CATs Practically and Profitably: Direct Benefits

Now on a very practical level, here is some advice gained through experience. While it would be best to start small, I found using CATs to be both practical and profitable in all my classes. Overall, I have used variants of many of Cross and Angelo's fifty CATs: directed paraphrasings, mini-evaluations, one-sentence summaries, focused listings, background knowledge probes, misconception/preconception checks, one-minute papers, muddiest points, research paper prospectuses, process self-analyses, and others.

I recommend using CATs more than once whenever appropriate. I repeated one of the CATs in the same class when I used directed paraphrasing (Cross and Angelo's Technique 23--all references are to the second edition) five times. I found that the students became more comfortable with this repeated CAT. The directed paraphrases improved each time. In this assessment technique, the student is asked to explain and give examples (in writing) of a concept to a friend

who is having difficulty. I liked the directed paraphrases for the reinforcement of each concept that they provided and for the writing practice. Writing clearly helps them internalize the concept. The directed paraphrase was the most useful CAT from the students' perspective, according to their evaluation comments. Explaining and then providing examples of the concept helped them learn and apply the new concept. Evaluating these was a good chance for me to assess and to address, through my written comments, each student's strengths and weaknesses. Here is a sample assignment for a directed paraphrase:

> **Directions:** A friend in another section of English 102 is having trouble understanding the terms *tragedy* and *comedy* as they apply to serious drama. Using your textbook and notes, write a brief letter in the space below explaining both terms for your friend. Remember to **use your own words** and to name for your friend an example of each type of drama to illustrate your explanation.

Another group of CATs that I strongly recommend is the mini-evaluations (Cross and Angelo's Techniques 41-50). These techniques ask for immediate feedback on teaching, testing, and assignments. While I did get some good suggestions from the students, the value of these CATs is that they establish a different relationship between the instructor and the students. Because the students get to evaluate and suggest changes in the course while they are still there, they have a different attitude toward the course and toward the instructor. I had many problems before using these techniques that I did not have afterwards. I think many problems are avoided when the students feel "empowered" to speak out. These techniques provided the best feedback I have ever received from students.

A simple technique to improve the reading of the assignments and class participation is one-word summaries (variant of Technique 13 "One-sentence Summaries"). Early in my literature classes, each student is asked to pick one word that she or he believes summarizes each of the assigned short stories. In class, each student is called upon to defend her or his choice orally. We then switch to picking a key passage when we reach a higher understanding of short fiction. This simple technique seems to increase participation in class discussion and to stimulate critical thinking and reading on their part, and it allows me to gauge the quality and quantity of their reading. It has really proven to be a very easy way to encourage active participation in class and solid preparation for class. It requires no effort on the instructor's part other than the assignment of the summaries and the leading of the discussion in class. Although more difficult, finding passages encourages a more critical reading and focuses the classroom discussion more clearly. This assignment was ungraded. As they became interested in and comfortable with the

idea of discussing literature, I found that I did not need a gimmick to have good discussions, and as we got into more complex works, I shied away from the summaries because the technique can foster simplistic analysis if the students do not grow beyond simple summaries.

More easy techniques to get discussions started are the focused listing, the background knowledge probe, and the misconception/preconception check (Cross and Angelo's Techniques 1-3). The unit on poetry is a really hard-sell to some of the more "practical" students. To start the unit, I ask the students to list all the words that the term *poetry* brings to mind (focused listing); then I have them write their own definition of the term before we discuss it (background knowledge probe); then we discuss the words and definitions (which ends up serving as a misconception/preconception check). These techniques usually ease them into the poetry unit and create a better climate for a good discussion. Most importantly, they also stimulate critical thinking.

More in the spirit of Cross and Angelo, the minute paper and the muddiest point (Techniques 6 and 7) provide excellent quick feedback on the success of a lecture or an activity. The students get a few minutes at the end of class to summarize what they learned in the lesson or to pinpoint the purpose of the lesson (variants of the minute paper) or they are asked what the muddiest (most unclear) point of the lesson is in their minds. These can be read quickly right before the next class; then clearing up the muddy points provides a good summary of the last class period and a smooth bridge into the new class period. Using similar techniques at a point in mid-class is a variant of the punctuated lecture (Technique 38).

For those who use term papers and projects, I would highly recommend the paper or project prospectus (Technique 27). I have my students fill out a prospectus similar to the sample in Cross and Angelo and then require them to schedule a one-on-one conference to present the plan to me for approval. This technique is used as the first of several stages in the research project. The benefits are that they have to think carefully about the project early in the process and that they get started researching early while there is still time to change topics or to order information from remote sources.

Another step in my research assignments is a process self-analysis (Technique 39, see appendix). The students are given a long handout with the steps in the research process clearly outlined. Each step has a blank for them to enter the amount of time he or she spent completing that step and space for the student to address comments or questions to me about difficulties encountered (and perhaps conquered) in that step. This technique is excellent because it allows me to give my students a guided tour through the research and writing processes from a distance. I have also been able to study how they approach a research task and make my assignments and instructions much clearer and stronger. The end of the process

analysis asks them to give the strengths and weaknesses of their final draft, to explain what they would do differently on their next research project, and to direct me to specific things they want me to comment upon in my evaluation of the paper. This page allows me to gauge their ability to judge their own process and product as researchers, critics, and writers; and it gives them practice in self-critique, which I have come to believe is one of the skills most lacking in our students and one of the most necessary skills for success. In fact, I think this process self-analysis is one of the very best CATs. I am using it with my English 101 and 102 on essays and research papers. If critical thinking and learning correct processes are keys to good education, then this CAT is a crucial tool for teaching and learning. It certainly helps me respond to their concerns and gives me much more ammunition to attack their mistakes at the root. It also encourages a dialogue with me, in addition to strengthening their self-evaluative skills.

Disagreeing with Cross and Angelo

I should note that I made substantial modifications to the CATs, as Cross and Angelo suggest instructors do. Cross and Angelo intend the techniques be relatively quick and easy methods to assess the overall level of learning in the classroom; therefore, the CATs are not signed, not graded, and quick. I consistently violated these three principles: I had the students sign almost everything they did because I believe in accountability; I graded many of the CATs (see scale and explanation below); and I expanded some of the CATs to the point that they were not "quick and dirty" and could not be completed in class, requiring substantial work on my part. Personally, I think students want feedback on their work and that these modifications were necessary for my students, but I understand Cross and Angelo's theory that quick assessment techniques provide a relatively painless way to assess learning and to provide direction to improve teaching. Of course, some CATs should not be modified because they should be ungraded and perhaps anonymous (e.g., muddiest point and the mini-evaluations), but here is how I explain the grading system on my syllabus:

> Some of the activities done in class or as homework will be graded. Such an activity is labeled as a "Special Assignment" on the course outline. Special assignments will be graded as follows:
>
> 0 = assignment not completed
> 1 = poor
> 2 = fair
> 3 = largely satisfactory
> 4 = good
> 5 = very good.

There were 10 special assignments comprising 10% of the final grade for the course (a homework/participation grade) in my 1992-93 sections of English 102.

Summarizing the Benefits of Using CATs

I will continue to use all of these techniques after the project, but with further modifications as needed. I found the main benefit of using CATs to be the increased participation and interaction that they encouraged. The assessment value, while significant, usually only confirmed what I expected. The CATs provide an excellent vehicle for assessment prior to graded assessment tools such as quizzes and tests, thus allowing both students and instructors to address weaknesses before the fact rather than after. Other benefits included giving students additional practice in writing, encouraging them to self-evaluate, creating opportunities for them to explain concepts to peers (an excellent way to learn), reinforcing concepts right after class to increase mastery, reviewing material for testing and mastery, teaching and reinforcing the processes, getting good diagnostic feedback, getting excellent feedback to improve my course and my teaching, and improving critical reading and thinking. I cannot say from one year's use whether or not retention was increased, but I understand from my readings that students need early, concrete feedback, which my method of using the CATs does provide.

As I noted above, preparing for this project motivated me to read several books and numerous articles on teaching and learning, the project got colleagues together to discuss teaching and learning in a very practical and profitable manner, and these techniques changed the dynamics of my classroom very positively. I think the long-term benefit is that I will continue to do classroom research for my own use and to make evolutionary changes in my courses in response to what I learn.

APPENDIX

A SAMPLE PROCESS SELF-ANALYSIS WORKSHEET

Name _____
Date _____

Self-Analysis of Research Process for Paper 1

As you complete each step of the writing process, record the approximate amount of time you spent completing each step. If you skip a step, simply enter none in the time column. This is not a quiz. There are no right or wrong answers. **Please be honest and complete.**

Under each step, make note of any problems or questions or comments you had in completing that step. **No problem is trivial if it frustrated you in completing this process.** Knowing what problems or questions or comments you had will help me understand your critical essay better and will help me better assist students in the future. Also we can work together to solve the problems and to answer the questions so that you can both speed up the process and improve your other papers.

Please follow the instructions on the paper assignment sheet carefully.

STEPS **TIME SPENT**

1. Selecting a story and narrowing to your topic _____

   problems or questions or comments:

2. Writing a thesis statement and roughing out an outline _____
   (You may change your thesis and outline after your research.)

   problems or questions or comments:

3. Searching for criticism (total)_____

   A. Twentieth-Century Short Story Explication _____

   problems or questions or comments:

   B. Short Story Criticism (contains **reprinted** critical essays) _____

   problems or questions or comments:

C. Other sources (**List all that you checked.**) _____
(See the reference bibliography handout and the library's computerized card catalog for other sources.)

problems or questions or comments:

4. Locating your sources in the library _____

problems or questions or comments:

5. Evaluating sources/gathering information (i. e., reading, note-taking)

A. Articles _____

problems or questions or comments:

B. Books _____

problems or questions or comments:

6. Completing the outline or re-organizing your paper _____
(Note: Your thesis may need to be changed here.)

problems or questions or comments:

7. Writing a draft of your paper _____

problems or questions or comments:

8. Rewriting/revising your draft _____
(Note: This step is crucial. Complete revision of several drafts is common.)

problems or questions or comments:

9. Preparing and proofreading the final draft _____

problems or questions or comments:

10. Preparing the Works Cited _____

problems or questions or comments:

24

Part II: Answer each question with an organized, thoughtful response.

1. What is good about your essay? Name at least three things.
2. What went well in the process? What was the easiest part to do?
3. What are the weakest aspects of your essay?
4. Which step or steps were the most difficult to do? What help do you need with this process before doing the next essay?
5. What all did you learn in doing this assignment?
6. What will you do differently on the next assignment?
7. As I read your essay, what specific things should I look for and comment upon in my notes to you?

Bob Morris is an Assistant Professor of English and began teaching at the College in 1990.

CATs Project: Seeing Problems, Finding Solutions

Barbara Murphy

Background

When the description for Tom Angelo's classroom assessment workshop first crossed my desk, it sounded to me like "old stuff." Conducting classroom assessments had been a requirement when I had taught slow learners and learning disabled students for three years in the Mastery Learning Program at Nazareth Academy in Rochester. Also, in my Methods of Teaching English class at Nazareth College, simple assessments were demonstrated as tools to check content and to manage the classroom. I signed up for something else for that morning of our January 1992 Professional Days at Finger Lakes Community College (FLCC). What did this man from Massachusetts have to teach me?

A lot, I discovered as I sat in his workshop on a last minute whim. First, I was introduced to the book Angelo wrote with Cross, *Classroom Assessment Techniques: A Handbook for Faculty* (1988). This very practical publication contains thirty techniques. My repertoire had previously consisted of about four or five. Second, in his talk, Angelo insisted that these assessments be ungraded, and in most cases, anonymous, a new one on me. I liked the feel of this: choice for me and emphasis on content for students. Third, Angelo showed how he and Cross have categorized these techniques into Academic Skills, Student Self-Assessment, and Teaching Assessment. I could "test" to see what students had learned, I could employ an assessment that helps students to track their own learning, or I could use a technique as feedback on an entire course or my methods. The variety of these classifications impressed me. Maybe, I didn't know everything. To top it off, Angelo clearly modelled the use of the assessments throughout the entire workshop with us. I was inspired. When the opportunity arose at FLCC to try out some of these techniques as part of a classroom research project with six other faculty for two semesters, I decisively jumped in.

Having now completed this project, I am beginning a new period of growth in my teaching. The simple act of selecting a class to study (College Study Skills Fall '92, College Composition Spring '93), applying the techniques, logging the process, and responding to the results have taught me invaluable lessons in how to conduct classroom research, a goal I had had for some time. However, what

strikes me most is how the use of these assessments has made me assess myself more, both on a class-to-class basis and over the long haul as I plan for the next semester. The more I "check out" what students have learned , the more I must continually evaluate my content and methods. To illustrate this point, I will explain four of several techniques that I used. In the first two, my teaching response was immediate, either during class or in the class that followed. In the latter two, I will show how the use of the two CATS helped me to improve my instruction in the subsequent semester.

CATs For Immediate Response

The One-Minute Paper and Memory Matrix are the two CATs I have used the most to quickly monitor what students have learned.

The One-Minute Paper (Technique 27 under "Teaching Assessment")

Description of the technique: A few minutes before the end of a class period (or at the beginning of a class to review the previous class), the instructor offers one or two questions to which the students are asked to write a response. The questions can relate to content, class procedures, homework assignments, or any specific that the instructor wants to evaluate. The CATs are collected and, in the next class, the instructor appropriately responds.

My experience with this CAT: I have used variations of The One-Minute Paper in many different classes over the past eight years. Sometimes the responses reflect good understanding by all students. If so, one can congratulate the students, pat oneself on the back, and confidently move on. At other times, the responses show confusion or partial comprehension. The reasons can vary. The instruction may have relied too much on the auditory for a very visual group, or the content may be tough, or the group, as a whole, may be lacking in effective study skills. I try to consider these factors (easier once I know the class) and then figure out a way to efficiently teach the material again.

In Spring 1993, during the second week of classes in College Composition, I asked my students to define two terms from the previous class: prewriting (the general term) and freewriting (a type of prewriting). Students understandably often confuse these similar terms which I use a lot. Out of ten respondents, nine were clear about the definition of prewriting; six understood freewriting. I was not surprised. I sensed they merely needed to hear/see the material again. Therefore, in the next class, instead of using the formal outline of the initial presentation, I created a cluster on the board to explain each term. I did not take the time to model

each type again, but I asked them to recall the examples I had previously demonstrated on the board. I did not follow this with another CAT because there was apparent understanding. The re-teaching took about eight minutes. This may be a hindrance to some instructors, but I feel it is better to catch problems as close to the time of the initial instruction as is possible. Students like it too. It bolsters those who are "with me" and aids those too shy to say they are lost.

One can incorporate this technique into one's plans or spontaneously present it at the end of a class that did not live up to expectations. It is simple to use and the feedback is immediate.

The Memory Matrix (Technique 2 under "Academic Skills")

Description of the CAT: The matrix is two-dimensional with rows and columns. Some information is provided. Students are asked to fill in the blanks.

My experience with this CAT: The Memory Matrix is a technique I began using in both College Study Skills and College Composition. I like it because the students are not only given clues, but are forced to look at given material in a different format, which can only help to nudge the material into longterm memory.

In Fall 1992, I lectured and gave notes on the four levels of learning to both sections of College Study Skills. Students often find it difficult to remember the levels in sequential order (proprioceptive, preceptive, perceptive, and conceptual). The notes had included the proper order with examples and key terms. In the very next class, I handed out a typed matrix with the headings:

Name of the Level (Filled in, but out of order)	The Level (1-4)	Key Words	Examples

Students were asked to work alone or with a partner and fill in the matrix from memory. Some dug right in, others whined, but all eventually tried. For my teaching response, I asked them to put aside their filled-in matrix to be handed in later for my records. I then handed them another blank matrix and placed a blank matrix on the overhead. Together we filled in the correct answers. In one of the classes, a glorious discussion arose with many more pointed questions than in the original lecture. Students clearly understood the four levels at the end of the demonstration which at the same time taught them a useful study guide to apply to other classes.

On the test of the four levels (which also included material on memory) in the class from my study, one student received a 60%; two received 75%. The rest of

the grades were in the 80's and 90's with one student scoring a perfect 105 (bonus was worth 5). I was very pleased with these results and believe the matrix contributed.

CATs Whose Changes Occurred In The Next Semester

Process Self-Analysis (Technique 21 under "Student Self-Assessment")

Description of the technique: This is one of four in the Cross and Angelo book that invites students to assess their own learning. In Process Self-Analysis, students are asked to keep track of the steps they take in carrying out the requirements of an assignment.

My experience with this CAT: The assignment here, from College Study Skills in Fall 1992, was to create a three to six minute oral presentation for the class on any aspect of the five-page MLA documented research paper they had just finished writing. To prepare them for the assignment, I had lectured (with notes and the opportunity for discussion) on the basics: audience analysis, organization, presentation, and self- evaluation. I emphasized the two aspects I most valued: organization and keeping within the time constraint. I then demonstrated a speech and opened the floor to discussion.

In the two previous semesters when I had first begun to require an oral presentation, I had repeated over and over that I was not expecting grand oratory; I wanted to see a clear focus that was supported within the time limit. However, at least half of the time, students were producing speeches that met neither criteria. I concluded that they needed to prepare more. Thus (in all my wisdom), I added yet another dimension to this end-of-the-semester assignment: the Process Analysis Sheet. It was to be handed in with their speech notes/outlines.

Interestingly, only one person out of twelve handed in the analysis, and the person who did fill it out was a non-traditional student whose final average in the course was an A. In addition, a number of the speeches were still hard to follow.

I finally came to my senses. The students needed more guidance on how to build a speech. Asking them to analyze their steps for a task that I did not really show them how to do was too much. So they reponded as all of us would. They did not do it.

Therefore, in Spring 1993, instead of asking them to log what they did to prepare, I created a sheet to help them to work through the process. It was divided into Introduction, Body, and Conclusion, and was set up so they could read an explanation of each section, followed by a specific example and a space where they could insert their own content. Students were engrossed as they worked on this in

class. I circulated and was able to give feedback to all. Before they left, I mentioned again that they could use this format as a model for their speeches or they could create their own.

I was very happy with the resulting speeches. Although two were too short, I could "hear" a plan in their speeches. A number of them used the model as a guide. I will definitely use this process sheet again and evaluate the results.

This time using a CAT showed me that I was asking students to do something I had not prepared them to do. I am amazed now that I could not see that before, but at least I now recognize it and have brought in necessary changes.

Exam Evaluations (Technique 29 under "Teaching Assessment")

I modified this CAT. Instead of asking students to analyze an exam, they evaluated the five-week unit on the research paper. I distributed this in Fall 1992 and again in Spring 1993 (having made students' suggested changes).

Description of the CAT: Students are asked specific questions about an exam (or a unit in my case) in terms of its fairness, appropriateness, and usefulness to their overall learning experience.

My experience with this CAT: I created a questionnaire in Fall 1992 that covered all aspects of the research paper assignment. I was particularly interested in four areas but did not tell students what those areas were. The students handed in the completed questionnaires to the secretary, who held onto them until I handed in final grades.

The Fall 1992 evaluation both surprised me and confirmed some of my suspicions. The good news was that the majority of the students found the MLA book useful (I had been having my doubts about it) along with the required prospectus(which I had used for the first time). The bad news was that a lot of the preliminary work I was bringing in on reading for main idea/supports was not viewed as very helpful. In addition, a specific reading in which I asked them to apply MLA documentation got a thumbs down.

Thus, in Spring 1993 I stuck with the required MLA book and the prospectus, and these again received favorable responses. I made changes in my presentation of main idea/supports, but in the Spring questionnaire I asked the questions about this too differently from the Fall to be able to compare them. This was a big disappointment. All I can say is I learned another lesson in conducting classroom research. The response to the reading I used for MLA application was overwhelmingly positive, a big change from Fall 1992.

I can only conclude that this type of evaluation is most useful. In fact, the Fall 1992 responses encouraged me to create a course evaluation for College Compo-

sition in Spring 1993 which was very enlightening. I will continue to employ these kinds of evaluations as I see fit.

Lessons Learned From "CATTING"

After two semesters incorporating CATs into my instruction, I have not yet become the perfect instructor, and each student did not obtain 100 on every test, but I do think I am a bit more open and honest than I was before I "stole" into Angelo's workshop at the last minute. Instead of wondering and guessing how things are going, I can obtain documented responses and look for patterns over subsequent semesters. Maybe I have actually found a way to stay young and eager in this profession.

For what it is worth, here are some final reflections on CATs. Perhaps they will encourage the reader to give one or two of these a try or help along the way as in the use of classroom assessments.

1. CATs are not sensitive to my feelings. It has to be faced: some of the students' responses can jab at the ego. Do I really want to hear what students have to say? Will I believe it when they tell me they understood everything perfectly? (Of course.) Will I trust their integrity when they tell me they lost me halfway through today's lecture? (A little harder to take.) In giving a voice to otherwise silent students, CATs can help me to become more sensitive to my students' needs.

2. CATs can only measure what I design them to measure. A CAT that asks a student to define a topic sentence in no way insures that the student can write a topic sentence.

3. CATs are crazy about cognition. The consistent use of these has forced me to think through the steps one must take to learn whatever I am teaching. This, for me, is no easy task, especially when I know the material very well. In addition, most students need me not only to show them the steps and the stairs, but to guide them up a flight. Some will definitely stumble, but if I keep an eye out by assessing and re-teaching, I will be able to catch them before they fall.

4. Student feedback is not always the word of God. Certainly the responses of students are valuable, at the very core of CATs, but they need to be examined carefully. I am thinking of a College Composition student who filled out my anonymous course evaluation (I recognized his handwriting). Question 9 and his responses follow:

9. You were required to go to the computer lab and work in Professional Write three times during the semester. What did you learn?

Answer: Yes. How to us(e) the computer.

Should this computer component continue to be required in College Composition?

Answer: No.

I am a happy witness to the validity of his first answer. An older student who had quit high school and later earned a GED, he had no experience with computers when he started the class. While in the computer lab, I saw him express extreme frustration. Around mid-term, I took him into the Academic Support Center where he received one-on-one help using the computer. By the time the last module rolled around, he was the only student to write a second draft on disk and revise it on disk. Thus, to me, his second answer does not make sense. My expectation was that if someone learned a lot, he would see the value of the requirement. Not true, I guess! He is certainly entitled to his opinion, but I am not about to omit this mandatory component when this degree of learning in context occurred. I needed to keep that perspective when evaluating this particular response.

5. CAT comparisons need to be made. Classes, of course, differ from semester to semester, from one hour to the next. What worked one semester with one group may fizzle with the next. Only over time can I truly form justifiable opinions about specific approaches and strategies.

6. Trust those instincts that nag. Those little voices that murmur: "I'm not sure if this is the best way to present this," are sometimes snuffed out by my lack of real information (a classroom assessment) and alternative techniques. What I forget sometimes is that if I will just ask (I am improving on this!!) and if students then verify that something is not working, answers to "How else?" will start to arise. Solutions come when I open myself up to the need for them.

Barbara Murphy is an Instructor of Developmental Studies and began teaching at FLCC in 1990.

THE PROSPECTUS

Martin C. Dodge

INTRODUCTION

Twenty one years of instructional energy expended has not generated twenty one years of measured successes. Often, I wonder how well am I doing; too often these reflective thoughts are buried by the very real and immediate demands of the ordinary teaching day. Serving as a Conservation instructor at FLCC has been nevertheless a wonderful experience. There exists an incredible variety of student talents and personalities. Often I wonder how I can justify allowing some of these students to carry away passing grades from my courses; do I delude them into thinking that they have succeeded on the "collegiate" level?

Some of these students might become recipients of graduate degrees; others will become discouraged and quit early in their careers as students. Fortunately, there is abundant opportunity to get to know a good number of them well enough to sense the metamorphosis from directionless and unmotivated to skilled and confident. In guiding students through this process, the freedom to tap learning environments ranging from sterile classroom settings to the richness of the Florida Everglades or the awesome grandeur Alaskan glaciers is cherished indeed. In spite of the passion that I do have for my job at FLCC, I find myself struggling often with the very frustrating task of attempting to motivate students to complete my carefully crafted assignments in a manner which I can honestly say is acceptable.

Enter the assessment effort. A healthy skepticism developed initially as the College's Ten Convictions gelled and the Eleven Competencies took on the aura of standards. The program review mandate forced each of us to shoehorn our courses into this lattice work in hopes of proving to ourselves and to our evaluators that we were actually making a difference in the lives of our customers. I discovered that my colleagues actually were concerned about improving teaching and learning. My conscience would not allow me to decline an invitation to participate in a Classroom Assessment Techniques research project. During both Fall of 1992 and Spring of 1993, I met on a regular basis with a group of faculty charged to experiment with the teaching and learning process. These meetings provided each of us - all from different departments - with an opportunity to share our successes and failures as teachers in a non-judgmental way. If nothing external to our sessions ever happened, I would still rate this activity as an unqualified success.

THE PROSPECTUS

Much of the substance of our experiments came from a handbook for faculty entitled, *Classroom Assessment Techniques: A Handbook for Faculty* (Cross & Angleo, 1988). As I reviewed this volume during the summer of 1992, one of the CATs, the "Prospectus" stood out as particularly applicable to my own course designs.

I believe in the value of projects and papers. These are intended to be complex "problems" for the students. The Principles of Ecology course, required of all sophomores in both the Conservation and Horticulture program, has always included an independent project of sorts. Currently, the project assigned draws upon the content presented and skills developed in many of the freshman level Conservation courses. In total - there are two parts - this project carries 40% of the course grade. In transmitting this assignment to students, I am sure that I have encountered all of the usual problems. The questions flow. What do you want? What should I choose as my study area? Which plant or animal should I select? Where can I find information related to my topic? With few exceptions, students put off any concrete action towards completion of the assignment until the last possible minute. By then, frost has obliterated evidence of more than half the plants and animals they might have observed earlier and it is always too late to get materials through inter- library loan. Always problems of organization and scope crop up in the finished papers.

In an attempt to rectify these concerns, I implemented the Project Prospectus during the Fall semester of 1992. Immediately following is the log entry for my initial implementation of this CAT.

PROJECT PROSPECTUS

CAT 12 (Cross and Angelo, 1988) Academic Skills
DATE ADMINISTERED: 9-21-92

GOALS:

Cause students to focus on the project requirements.

To determine how well students understand the project assignment.

To stimulate students to provide themselves with a detailed timetable for completion of project tasks.

AGENDA:

Provide students with a prospectus form to be completed within one week. The prospectus is due three weeks prior to the completion date of the project. Return the prospectus to students with comments the class following the due date.

REASONS FOR USING THIS CAT:

The project for the Ecology course has always been a major task for the students involved. I felt that a prospectus as described would cause students to address the problem in a timely manner and organize their schedule and resources to complete the assignment more effectively.

RESULTS OF THE CAT:

The results obtained vindicated the value of the exercise and convinced me to administer such an assignment to all sections of this course in subsequent semesters. In another sense, the results were disappointing. I approached the assignment in good faith and without a pre-assigned point value for its completion assuming that the students would follow through without such an external club. Of the 18 students in the section, only eight completed the prospectus by the requested date. Of these eight, only four submitted the completed project on time. On the bright side, the four submitted included the top three grades awarded for the finished product.

TEACHING RESPONSE TO THE CAT:

Students require external stimulus; voluntary ungraded work is not likely to be completed. Assigning a point value to the prospectus would assuredly result in a greater rate of return. Forcing the student to formulate such a plan would, I feel, result in a more thorough and organized finished product - particularly in light of the instructor opportunity to offer specific suggestions.

TEACHER SATISFACTION RATING WITH CAT: 9/10

DISCUSSION:

When I first administered this CAT in my classes, I had the sense that I was onto something that would help students to help themselves. Here was a chance for them to become involved in their own learning process. Of course they would complete these tasks willingly....

On its maiden voyage, the Prospectus suffered from less than 40% return rate. It was the conscientious - usually older - student that completed the task faithfully and thanked me for the opportunity. On its second run (Spring 1993), I offered the Prospectus assignment as optional to four of five sections of my Environmental Chemistry course but ascribed a 25 point value to it for the fifth section. Only nine of more than 70 students in the four optional sections actually turned in a completed prospectus. Seventeen of 21 completed the assignment when doing so had a direct impact on their grade. I might add that this belief in external motivators has been reconfirmed by my experimentation with the magnitude of late penalties for

projects and papers. With no penalty, assignments trickle in with no real pattern; a 10% penalty yields about a 70% on time rate; the 20% penalty (extenuating circumstances considered) results in nearly a 90% on time rate for assignments. Perhaps it would be wise to assess stress levels before one gets too carried away with the use of such academic clubs.

The Prospectus form itself and the specific questions asked must be tailored to each assignment and refined through actual use. The following form, adapted from one suggested in Cross and Angelo (1988), represents a revision of those used in the fall of 1992 for the Ecology project and in the spring of 1993 for the Environmental Chemistry paper.

Principles of Ecology Name:_____
CON/BIO 202/221 M. Dodge, Fall 1993

ECOLOGY PROJECT PROSPECTUS

Due date: Friday 9-17-93 100 points; late penalty 20 points

The following assignment is intended to help you get started with your term project. Please respond to each of the questions/statements in a brief but well-thought-out answer. Your own statements are to guide you through the planning process and can be changed in any reasonable way as you proceed. Ask questions at any time. Originality and creativity are encouraged.

Title (Part I):_____
Description of study plot: _____

Title (Part II):_____
(Indicate your choice of organism for the Niche Analysis)

Major questions you hope to answer:

Proposed table of contents:

Resources needed:

Be specific here. List all sources of information in the required citation format. This should include at least two articles found in technical journals, field guides needed, and the nature of field testing equipment you feel you might use.

Calendar for plan of action (Part I):

Thorough study of assignment and sample paper _____
Dates/times for field observations:_____

Writing/word processing stage _____

Projected completion date _____

Calendar for plan of action (Part II):

Library research _____

Writing/word processing stage _____

Academic Support Center meeting _____

Projected completion date: _____

What are your feelings about having done this prospectus?

What are your biggest concerns and/or questions regarding completion of the total assignment?

The prospectus has since become a permanent part of my methodology. During the fall of 1993, I required all of my ecology students to complete a project prospectus and asked them to evaluate its effectiveness. In answer to the question, How successful was the project prospectus in motivating you to organize an attack plan on your term project?, the following response distribution resulted:

Total Failure	0	1	2	3	4	5	Total Success
	1	4	1	17	31	16	

Written comments confirmed the positive numerical evaluation. I must say that my belief in the value of the total project was reconfirmed by a response on the same survey in answer to the following question:

How effective was the term project as an educational experience?

Total Failure	0	1	2	3	4	5	Total Success
	0	0	1	7	24	38	

Administering and evaluating the prospectus is a time consuming task. Far worse is the time commitment for the evaluation of the papers themselves. There is joy in finding excellence in student work though and if the prospectus allows students a closer approach to excellence then the effort is vindicated. The argument for small class size and reasonable total teaching loads is strengthened by the desire to experiment with teaching techniques. These take time; quality and excellence take time. I do believe the effectiveness of my own teaching efforts and administration of additional CATs as part of the overall assessment project was much reduced in proportion to the number of students, sections and preparations that define my total teaching load.

CONCLUSION

The completion of a prospectus forces students to make early initial steps on the project/paper. The planning/time management activity causes them to think through the steps needed to carry out the assignment. Requiring the inclusion of citations for project references often forces students to discard topics about which little has been written. The opportunity for instructor feed back on initial plans averts many organizational and lack of focus disasters and can serve to put students better on track. My own evaluation affirms that student response to the prospectus has been very positive and that the overall quality of the projects and papers has improved.

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How CATs Changed My Teaching Style

Kathleen DelCour

Background

Education is going through a considerable revolution. Much of the literature which is being written today is concerned with teaching the student in the manor in which they learn best. This seems to dispel the standard lecture method of today's college professor as the primary means of conveying information. Many new techniques are popping up, supported by good sound research, which seem to indicate that the teacher should adapt his or her instruction methods to the learning styles of students for their success in the given course work.

CATs, or more formally Classroom Assessment Techniques (Cross & Angelo, 1988), are representative of this new thrust; these concepts have been practiced to some extent in the classrooms of FLCC for the past year. This writer has used a variety of these techniques. This article is my Journal which reflects the research which was conducted during the 1992-93 academic year and the startling way it has changed my teaching style.

As I began my teaching career, I tried to emulate what I felt were the best teaching characteristics of each of my former professors. It proved to be a wise choice and I was very successful. Of course, these measures were the standard lecture, questions and discussion. Those students who function well in this type of atmosphere did very well; those who had problems with it, fell by the wayside. I never really questioned those numbers because, as the old statement goes, "Look around you. By the end of the semester, 50% of you will be gone from this class. Will you be a survivor?" I believe it was called "The Fear of God" based on the registrar's statistics. That is just how things were done; it was tradition.

The longer I taught, I began to question **why** it had to be that 50% of my class would fail. Truly, I felt that all my students could pass if: (1) they studied, (2) learning was fun, and (3) I made them feel that they had accomplished something special. So I broke from tradition by beginning the semester by not saying anything about failing and by instilling a firm belief that we would be having fun learning new skills. The whole atmosphere of the class changed. It even took me by surprise. There was a genuine interest in the subject matter without the slightest indication of any sense of failure on anyone's part. Perhaps I had stumbled on something and while pondering this aspect, into my life walked Thomas Angelo.

Angelo spoke to the faculty on one of our Professional Days which always begin the start of a new semester. He brought forth this concept of *classroom*

assessment and how it could improve the success rate in college courses. But, as he cautioned, if you use this process you should realize that to make it work you must open your teaching philosophies to critical scrutiny. It is really like exposing your soul to the world. Everything you believe in and the paths you have followed in your career are laid bare; for better or for worse, you have to be willing to accept what you find in this new arena. But the thought that we could do it better; that we could improve our retention rate; that we could make learning happen in new and exciting ways was overpowering. I eagerly took the *Handbook* which he brought and began to seek how to use these new ideas in my Macroeconomics class.

Implementing CATs: Invented Dialogue

An example of a one technique is called Invented Dialogs, (Technique 14), which provides a dual measure of evaluation for the instructor. The students have to write a conversation or a dialog between specified individuals, demonstrating their understanding of concepts or theories. I specifically chose this technique to test the student's ability to apply the theories of the Great Economists to every day current situations. To use this technique, the teacher **must** (1) write an example of a dialog themselves, (2) time exactly how long it took them so they can gage how long to allow students to accomplish the task, and (3) also provide a list of criteria for the project, such as typed, double spaced, length. Just sitting and writing the initial handout is quite time consuming for the instructor but very rewarding as seen in the overall result. When the dialogs are completed, each is graded as to content and presentation, then returned with comments to help clarify any problems **before** material is tested. It is possible, if the time allows, for the student to rewrite his or her work incorporating the proposed corrections suggested by the instructor which further enhances student comprehension and success rate. This approach has also been used successfully by one of my colleagues in preparing students for a critical paper in Business Communications. As myself, he was delighted with the final product and the improvement in grades.

You might be asking at this point what an example of this dialog might look like. For instance, Adam Smith and John Maynard Keynes could be having a conversation about the downfall of Communism and how it would affect the teachings of Karl Marx. The student must address each economist's theories showing how they would apply in this modern time frame. But remember, you must write an initial handout demonstrating how the assignment should be approached. To further help you understand this process, I have included copies of my initial handouts in the Appendix.

CATs: Classroom Assessment Quality Circles

Another technique which I have used is a variation of Classroom Assessment Quality Circles, (Technique 30). Many times when an instructor is going over critical concepts or simply reviewing the latest homework assignment, students exhibit blank stares, fumble words or hide behind their textbook. At that time, that is before Angelo, it was a clear indication that not much studying had been going on which would anger me. And, like any other instructor, I would lecture students on the value of studying and applying themselves. Finally, I considered the fact that maybe they **were not** learning because I **was not** teaching in their style.

After Angelo, when a situation arose as I have described, I simply divided students into groups, telling each member of the group to explain the concept or material to the other members as best as he/she could. It is suggested, when using this technique, that specific instructions or rules be given to provide direction in accomplishing the task at hand. Because of my first unexplored experience, I found that **no direction** proved best and was the most successful. It did elicit the answer I was looking for and also allowed considerable learning to take place. It also provided me the opportunity to leave the room for a few minutes so my presence would not disturb the process. What an amazing transformation. Upon returning, I found a tremendous amount of conversation going on in "student-eze." Student-eze is that wonderful dialect which explains everything you have said in simple, common every day student language. Ideas were being exchanged; problem areas were being straightened out. At this point, I had the students explain the material to me which was my way of jumping back in and continuing the lecture.

I use the group structure quite a bit now because of the increased involvement of the students who hold back or withdraw. Those who understand the assignment have no problem helping those who do not; those who do not understand seem to have no problem asking questions of their peers and accepting help. In fact, it **really** makes learning fun and we have a good time. I can honestly make that statement and highly recommend this group work in the classroom.

CATs: Exam Evaluations

An interesting experiment in Assessment was using Exam Evaluations, (Technique 29). After using various types of exams, such as multiple choice, essay, matching and fill in the blanks, the instructor polls the class as to the specific type preferred. It is suggested that students feel more comfortable with tests when being involved in their preparation. Using this as a base, I asked my class what questions

they thought should be on the next test. They were so surprised that they did not know how to respond. I gently nudged them into a positive path by choosing a specific area and developing a question based on that information. Soon, to my delight, they were forming their own questions. This was good review and we came up with a very formidable exam. From their list, I chose the questions which eventually became the formal test. Whether the overall grades were better or not would need further research, but I found it interesting that no one had ever asked the students for such input before.

Conclusion

After using CATs for a year, I find that I am more in tune with the needs of my students. We have fun while consuming volumes of economic information. When I enter the classroom, I am perfectly relaxed; I can change my direction at the drop of a hat; I can test any topic I feel they are not sure of within a matter of a minute or two; and, as I have said, we have even constructed an exam together. As an instructor, do not be afraid to be different. Take a chance and try new things; make learning fun. If you do, you will open new doors which you never knew existed. It is a great path to tread on, for you, and for your students.

Appendix

Instruction for Completing Invented Dialogue:

Create a conversation between Adam Smith and Karl Marx **or**

Create a conversation between Adam Smith and John Maynard Keynes **or**

Create a conversation between John Maynard Keynes and Karl Marx.

CHOOSE ONE OF THE ABOVE ALTERNATIVES.....Using the knowledge which you have gained while studying the Great Economists, develop a dialogue which will demonstrate your understanding of the selected Economists' theories.

Your example should demonstrate:

Creativity

Knowledge of the specific Economist chosen.

Communication Skills - How clearly and precisely you can convey your ideas. This takes practice and skill, so don't get flustered.

TOPIC:

President Clinton's proposed Health Care Reform will, hopefully, provide health care for all Americans so no one can be denied proper medical attention. How would these Economists feel about the Government becoming involved in this market; directing, controlling, and regulating the availability of doctors' services and fees.

Sample of Exercise in Comprehension of Economic Theorists Invented Dialog

Adam Smith: How you doing, Karl?

Karl Marx: I'm fit to be tied, Smith. How can they do this to me?

A.S.: Now Karl, you knew it would happen sooner or later.

K.M.: Look A.S., it was you and your Capitalists friends who were supposed to fail, not me. You're always causing trouble. You gain at the expense of others and it is wrong. Everyone should share the wealth.

A.S.: Well, they did it your way for a long time but it seems like they are pretty unhappy. I know I'd hate to stand in lines for hours to get my vodka.

K.M.: Get off my back, Smith. You have thousands of people who would stand in lines but can't because they haven't any funds to buy with. At least my people can buy: we all shared basically equally in the income generated from GNP. But now...we'll become just like you...we'll have your problems.

A.S.: That's your problem. No chance to, or desire to, improve one's self. Directed,...that's what your people were. No individual satisfaction.

K.M.: But they all shared. No one got rich from the sweat of his peers . . . like you Capitalists.

A.S.: Look, Karl, they will be better off.

K.M.: Really...prices are sky high; people have to do without; there is waste; food literally is left in the fields to spoil and rot. It is being done solely to keep prices up. Shear chaos.

A.S.: The Market will take care of everything. Simple theory of Supply and Demand...Give it a chance.

K.M.: Never...Never. They will be back. They will be back. They will discover your ways are wrong. They will beg me to redirect them. The people will rise up and be strong.

A.S.: Be real, Marx. Your time has expired. No one will seek you again...but they will always remember you. Now it is I and mine who will lead them.

K.M.: I don't know where you get your ideas from A.S., but like your famous General, I shall return...I have to.

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CATs in Cooperative Physics

Sam Samanta

An age old assumption in physics teaching has been that very few students in the class will learn the subject very well and so the instructors usually address themselves to the elite group in the class in perpetuation of high standards of the profession. Teaching at a community college does not allow for such arrogance on the part of the instructor. Here, we must teach all students to succeed, not just challenge the best in the class.

As a new instructor at FLCC and a participant in the 1992-93 assessment project, I welcomed the opportunity to learn about classroom assessment techniques (CATs) (Cross & Angelo, 1988), the experiences of other teachers to augment my ideas and investigate creativity to enhance learning on part of the students. One of the most pleasurable parts of this activity was the sharing of ideas and experiences across the disciplines with other faculty members and gaining an appreciation of the institutional initiative through the CATs project. Having studied and/or worked at five research oriented universities, I believe that the community colleges are at the cutting edge of innovations in many pedagogical techniques.

This article presents my involvement with several CATs during 1992-93 academic year in Physics 118 and 119. Described are my experiences (and the problems) with pairing, squares and groups, the use of a paper and oral presentations in the class, an overview of my reactions to CATs designed by Cross and Angelo (1988) which I tried and assessment of CATs to revamp my teaching and learning in the physics classroom.

Pairs, Squares and Groups

In order to provide personal context for cooperative learning for PHY 118 in the Fall 1992, I formed pairs of students in the beginning of the semester. A diagnostic questionnaire including some questions about past physics and mathematics course work in high school and college was used for pairing a "strong" student with a "weak". Half way through the semester, and after two tests, a "weaker" pair was combined with a "stronger" pair to form equitable "squares."

In the Fall 1992, the initial pairing did not work too well for several reasons. The pairing based on initial assessment was not always well balanced; prior background proved not always to be a good indicator of subsequent performance in community college student body. Also, if one of the partners was absent,

cooperative learning did not take place during the scheduled meetings outside the class. Some students dropped the course, compromising the pair structure even though the remaining students were provided with new partners. In addition, about 25% of the course grade was based on pair work. In some cases, only one partner put in a lot of work and the other received the "benefits." Finally, "squaring", pairing the pairs, at about 7th week did not work too well because either initial pairs had jelled or new alliances had alienated some old pair members from each other.

Thus my theoretical idea of progressing from individuals -> pairs -> squares -> class did not work well because large fluctuations in the pair performance inhibited pair bonding in many cases and that inadequacy undermined subsequent pairing of pairs, that is squaring.

In PHY 119 class of Spring 1993, the next class in the sequence of non-calculus physics, instead of forming pairs, I decided to form groups of four to five students, right at the beginning of the semester to maximize cohesiveness. Of the 28 students, 22 were in the previous course. In the first lab meeting, with about 14 students, I asked that groups be formed with the provision that the students from the Fall class spread out and that in each group the class/work schedules were such that the group could meet outside the class for at least two hours. I asked the students to keep logs of their meetings. In contrast to the previous semester, they were not assigned a pair or given a group assignment or test. They were encouraged to study together; however, each person was ultimately accountable for her own learning through individual tests. At-risk students were clearly identified by the first test and immediate attention was given to these students to implement appropriate remedial steps in the form of regular one on one office meetings and help from other resources on campus.

In retrospect, compared to pairs of Fall 1992, the groups of Spring 1993 worked a lot better. Most people in a given group were able to get together; an unplanned absence of an individual did not disrupt the routine. Explicit responsibility for optimal functioning was decentralized, for the better. Each person was embedded in a tight matrix of diverse personalities and styles.

Assessing Groups

During the last week of the Spring semester, a Group Survey of the class was done to assess the utility of group learning from the perspective of the students and to help review teaching and learning. The results of this survey indicated:

1. Average numbers of hours spent on this course outside the class and in group meetings were 5.25 and 2.33, respectively. Average length of time spent during weekly meeting for assessing the quality of classroom teaching was 5 minutes.

2. *Student list of problems encountered in learning the course*: sometimes the transition between topics unclear, lectures too fast, test problems different from homework problems, lots of equations, too many variables, people in group not showing up for meetings, personal problems, disagreements when working in groups.

3. *Practical suggestions from students to tackle the above problems*: study hard and ask a lot of questions, take more time to do problems, cut back on work schedule if necessary to improve studies, get different views perhaps from other books, realize that there are more than one way of solving problems.

4. *Practical suggestions for the instructor to help the class with the above*: do more problem solving in the class, we are visual learners so give us more visual examples, talk slower, give more detailed notes.

5. *List things which are especially helpful to the students in the course*: giving notes that the instructor has written out, taking pressure out of taking tests through mock tests, willingness to repeat things over again until "we get it", excellent day to day humorous examples, help students with problems, having students do problems on board in groups.

6. *List advantages and drawbacks of working in groups*:

Advantages: saves time, everyone helps one another to learn more, comfortable to ask questions, learn to work like a team, reinforce concepts from lecture, more understanding of how other people think. (Out of 25 respondents, about 20 would recommend that other teachers form groups. The students thought that groups provided other information useful in succeeding at school and would form groups on their own in future.)

Drawbacks: not every one is always present, someone may be doing all the work, distraction from one's own concentration.

7. *Suggestions for other groups on how to get together and work more efficiently*: work on homework before meeting with the group, divide work first and then share, share efficient techniques of studying, schedule times to meet and make those meetings, spend time wisely, find a quiet place to meet, make sure that no one's problem go unattended.

A Physics Paper

In order to change student attitudes towards quantitative methods in science, and enable students to realize that they could do creative work with these tools, students were required to write a paper and do a presentation to the class, during both semesters. At mid-semester, the students were asked to pick a topic of interest and relate it to physics in quantitative terms for the paper and presentation. In some cases, I took students to the library to help them choose the subject matter and introduce them to methods of assessing information.

Students were asked to submit a one page abstract of the proposed topic with five references so that I could verify that they were able to address a suitable subject/ synthesis, and that they had access to appropriate resources. No grade was given for the abstract, but it had to be reviewed by me so that I could suggest changes, ideas and sources before a student could start intensive work on the paper.

About three weeks later, the first draft of the paper was due. It was to be five pages minimum in addition to diagrams and an updated list of references. I returned the first draft with comments, corrections and suggestions for major or minor changes. The final draft was due two weeks later.

During the last two weeks of the semester, during lab period, individual students used some combination of transparencies, home-made or professional video, slides and computer programs to do their presentation. The presentations lasted about 15 minutes followed by a short period of open discussion. Listeners filled out a Presentation Evaluation Form (an exercise in peer assessment that I designed) during the presentation, encouraging them to pay close attention to the speaker. Although each student was responsible for his own paper/presentation, some did interrelated presentations. For example, "Ultrasound principles and industrial applications" by one student was complemented by "Medical use of ultrasound: Fetal imaging" by another student. Other cluster presentations include the theme of virtual reality, fiberoptic network/information highway, holography, water management, welding, active and passive solar energy. Thus, individual accountability for the paper forced students to accomplish more in their respective groups and encouraged the students to see the connection between their topics. In the sharing of insights in their respective work, class spirit was evident.

An Overview and Reactions to Additional Physics CATs

Additional CATs which were attempted in the Physics classes included:

1. Muddiest Point CAT was used only once in Fall 1992 and twice in Spring 1993. I recommend this CAT to be used at least five times during a semester.

2. Mini Evaluation CAT was used once every semester; it could be used twice or thrice.

3. Mini gradeless quizzes were done impromptu, much more extensively in PHY 119. The methods of problem solving were emphasized. Typically, I explained a new concept or procedure and then asked students in the class to take a blank sheet of paper (name optional) and solve a problem, sometimes shown diagrammatically on the board. In most cases, I collected responses after about 7 to 10 minutes, usually giving general feedback on the spot. Sometimes one or two students were asked to show their work on the board. Students were sensitized to the immediate goal of learning (oftentimes eliciting critical thinking on their part). I found that the CAT forced students to be more attentive and take active part in learning. I also realized I had to be clear in my expectations of student learning.

Conclusions

Using CATs for an academic year, led me to the following conclusions:

1. Early and rapid feedback from the whole class received through CATs allowed changes on my part and students' to improve retention (approximately from 80% to 95%).

2. Almost every student gains from cooperative learning. As an instructor, CATs enabled continual positive feedback or constructive criticism from groups.

3. Students shared resources; however, making each person responsible for his own grade preserved the power of self-initiative.

4. The CATs, when not extensive, do not necessarily provide motivation for students. We must provide contextual underpinning for the subject matter taught (mini quizzes, paper/presentation) and the interpersonal bonding in the group.

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